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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,963	04/07/2004	Shaolin Li	Epogy 2004-4	9556
43831 7590 07/11/2007 BERKELEY LAW & TECHNOLOGY GROUP, LLP 17933 NW Evergreen Parkway, Suite 250 BEAVERTON, OR 97006			EXAMINER JACKSON, BLANE J	
			ART UNIT 2618	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/820,963

**Applicant(s)**

LI, SHAOLIN

**Examiner**

Blane J. Jackson

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2004 and 19 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The Information Disclosure Statement filed 21 September 2005 is made of record.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "said second mode". There is insufficient antecedent basis for this limitation in the claim. This second mode is treated as another operating mode in the rejection.

### ***Claim Objections***

Claims 21-28 are duplicated by claims 38-45. It is expected that claims 38-45 are cancelled.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11, 13-20, 27-30, 32-37 and 44-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al. (US 2004/0082356) in view of Bjorklund et al. (US 7,126,926).

As to claims 1, 10 and 17, Walton teaches a radio frequency multi-antenna data receiver implemented in a single chip integrated circuit chip (paragraphs 0011 and 0687, a MIMO WLAN system comprising an access point (AP) (110a), figure 1) comprising:

A multi-antenna signal processing circuit within the single chip IC (figure 7, paragraphs 0210) being adapted to:

Receive M independent RF modulated input signals from N separate data module transmitters where  $N > 1$  (figures 1 and 7, paragraphs 0210 and 0218-0220, AP's (110a,b) comprising RX spatial processor (740) and RX data processor (742) receive from multiple user terminals (120a-l)),

Simultaneously process said M independent RF modulated input signals using a channel mixing matrix to extract N data signals transmitted by said N separate data radio module transmitters (figure 7, paragraph 0042, AP (110x) communicate with multiple user terminals simultaneously; paragraphs 0013, spatial processing facilitates data transmission from multiple transmit antennas and/or data reception with multiple receive antennas and paragraphs 0459-0492, uplink spatial processing where uplink designates signals received by the access point).

Wherein said multi-antenna signal processing circuit is operated selectively to enhance an operating transmission range and/or an operating data rate of one or more separate baseband processors which also receive data from said N separate data radio module transmitters (figure 7, paragraph 0044, a MIMO WLAN system to provide high throughput with greater coverage capabilities; paragraphs 0011-0016, multiple rates, power control and transmission modes are supported by the MIMO WLAN system to attain high throughput when supported by the channel conditions and the capabilities of the user terminals).

Walton teaches a MIMO WLAN system comprising access points and user terminals to provide high instantaneous data rates with greater coverage capabilities than conventional WLAN systems, figure 1, but is silent as to processing video data as in a closed circuit broadcast security receiver comprising a data receiving device adapted for receiving video data.

Bjorklund teaches a multi-tier WLAN system for digital radio communication utilizing a first tier access point with relatively long-range radio connected to a second tier access point with relatively short-range radios to support various applications including the control of hotel door locks, individual room temperature control and remote video monitoring, Abstract, figure 1, column 3, line 57 to column 5, line 50. Bjorklund directly describes a video security system comprising a wired LAN, a host, several video monitors, a first tier base station or access point (640) in wireless communication with video camera (610) and a second tier access point (670) to connect another video camera (620) to the first tier base station, figure 6, column 8, lines 20-48. Bjorklund

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teaches the wired LAN (690) is connected to any (first tier) access point readily available on the market, column 3, line 66 to column 4, line 12, such as an IEEE 802.11 access point (640) as depicted utilizing wireless link (642) as opposed to a Bluetooth or RadPad protocol wireless link (646), figures 6 and 15, column 18, lines 53-66.

Since Bjorklund teaches the video camera (610) and communication module (660) are particularly useful in situations where high data throughput is desired and/or the video camera is located relatively far from the base station, figure 6, column 8, lines 28-36, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the WLAN application of a video security system of Bjorklund in the MIMO WLAN system of Walton for high data throughput of high video resolution from a relative far video camera.

As to claim 2 with respect to claim 1, Walton teaches the multi-antenna signal processing circuit is enabled and selectively operates in *said second mode* when channel conditions indicated that a data rate in said channel has fallen below a predetermined threshold (paragraphs 0658-0667, closed loop rate control may be used for data transmission on one or more spatial channels, the rate is changed with channel conditions).

As to claim 3 with respect to claim 1, Walton teaches said multi-antenna signal processing circuit is enabled and selectively operates in response to a determination

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that a data rate in said channel is to be enhanced above a nominal operating rate (paragraphs 0674-0676, uplink rate control).

As to claim 4 with respect to claim 1, Walton teaches the multi-antenna signal processing circuit is enabled and selectively operates in response to a determination that there is noise and or interference in said channel (paragraphs 0013 and 0052-0062), different transmission modes such as spatial multiplexing may also be used depending on the number of antennas at the user terminal, the number of antennas at the access node and the channel conditions)

As to claim 5 with respect to claim 1, Walton teaches the multi-antenna signal processing circuit is compatible with an 801.11x communications protocol (paragraph 0050).

As to claim 6 with respect to claim 1, Walton teaches the multi-antenna signal processing circuit is configured as a multiple-in, multiple out (MIMO) processor (figures 1 and 7, paragraphs 0052-0056, AP (110x)).

As to claim 7 with respect to claim 1, Walton teaches the multi-antenna signal processing circuit demodulates a data stream transmitted using multiple independent antennas which each transmit a portion of said data stream which data stream represents captured video from N separate radio module transmitters (paragraphs

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0053-0056, each MIMO channel may be decomposed into  $N_s$  spatial channels,  $N_s$  data streams may be transmitted on the  $N_s$  spatial channels).

As to claim 8 with respect to claim 1, Walton teaches the multi-antenna signal processing circuit generates a speculative response to ensure that said data receiving device complies with timing requirements of a communications protocol (paragraphs 0684-0686, access point derives an initial estimate of the round trip delay associated with the user terminal to compute an initial timing advance sent to the user terminal).

As to claim 9 with respect to claim 8, Walton teaches the timing requirements are associated with an 802.11x compatible data link (paragraph 0050).

As to claim 11 with respect to claim 10, Bjorklund of Walton modified teaches the first data capture device is used as part of a security system (figure 6, column 8, lines 20-62).

As to claim 13 with respect to claim 10, Bjorklund of Walton modified teaches the first data capture device is a digital camera (figure 6, column 8, lines 20-62, video cameras (610 and 620)).



As to claim 14 with respect to claim 10, Walton teaches the multi-antenna signal processing circuit receives and processes video data from N radio module transmitters simultaneously (paragraph 0042).

As to claim 15 with respect to claim 10, Walton teaches the radio module transmitter is configured to transmit said RF modulated signals selectively to said second separate location (paragraphs 0057-0059, the beam-steering transmission mode for the uplink is dependent on the number of antennas employed at the user terminal).

As to claim 16 with respect to claim 10, Walton teaches the first data capture device transmits the video data using N separate antennas simultaneously as N separate bit streams (paragraph 0008, 0052 and 0053, the access point and terminal unit comprises multiple transmit/receive antennas for data transmission and reception; a MIMO channel may be decomposed into  $N_s$  spatial channels where  $N_s$  data streams may be transmitted on the  $N_s$  spatial channels).

As to claim 18 with respect to claim 17, Walton teaches the multi-antenna signal processing circuit processes at least 4 separate input signal representing a data stream multiplexed over four separate bit streams (figure 7, paragraphs 0052-0056, each access point is equipped with four transmit and receive antennas where each MIMO channel is formed by the  $N_t$  transmit and  $N_r$  receive antennas and may be decomposed

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into  $N_s$  spatial channels; paragraphs 0459-00492, uplink, or signals received by the access point, spatial processing).

As to claim 19 with respect to claim 17, Walton teaches wherein space division multiple access is realized by separating different RF signals from different signal paths simultaneously in the single chip IC (paragraphs 0042 and 0053, spatial processing is required at a receiver in order to process multiple data streams on the  $N_s$  spatial channels).

As to claim 20 with respect to claim 17, Walton teaches a localized encryption is achieved by independently controlling an energy modulation of separate transmission antennas used simultaneously by each of said  $M$  separate transmission signals so that data signals received by unintended recipients are indistinguishable from noise (paragraphs 0329-0355, beam steering mode).

As to claims 27 and 28 with respect to claim 21 and claims 44 and 45 with respect to claim 38, Walton teaches a MIMO WLAN system comprising access points and user terminals to provide high instantaneous data rates with greater coverage capabilities than conventional WLAN systems, figure 1, but is silent as to the data stream represents captured video from  $N$  separate radio module transmitters.

Bjorklund teaches a multi-tier WLAN system for digital radio communication utilizing a first tier access point with relatively long-range radio connected to a second

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tier access point with relatively short-range radios to support various applications including the control of hotel door locks, individual room temperature control and remote video monitoring, Abstract, figure 1, column 3, line 57 to column 5, line 50. Bjorklund directly describes a video security system comprising a wired LAN, a host, several video monitors, a first tier base station or access point (640) in wireless communication with video camera (610) and a second tier access point (670) to connect another video camera (620) to the first tier base station, figure 6, column 8, lines 20-48. Bjorklund teaches the wired LAN (690) is connected to any (first tier) access point readily available on the market, column 3, line 66 to column 4, line 12, such as an IEEE 802.11 access point (640) as depicted utilizing wireless link (642) as opposed to a Bluetooth or RadPad protocol wireless link (646), figures 6 and 15, column 18, lines 53-66.

Since Bjorklund teaches the video camera (610) and communication module (660) are particularly useful in situations where high data throughput is desired and/or the video camera is located relatively far from the base station, figure 6, column 8, lines 28-36, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the WLAN application of a video security system of Bjorklund in the MIMO WLAN system of Walton for high data throughput of high video resolution from a relative far video camera.

As to claims 29, 46 and 51, Walton teaches a system, method and apparatus comprising:

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A first data monitoring and capturing circuit capable of receiving data from a first location (figures 1 and 7, paragraphs 0040-0042, AP (110x) receiving data from terminal users (120x)),

A transmitter to transmit the data to a second location (figure 1 and 7, user terminals (120x)),

A first data receiving circuit at the second location for receiving the data (figures 1 and 7, paragraphs 0040-0042 and 0218, AP (110x) comprising demodulators (722) and RX spatial processor (740)),

A multi-antenna signal processing circuit capable of:

Receiving  $M$  independent modulated signals representing the data (paragraph 0053, a MIMO channel is formed by the  $N_t$  transmit antennas and  $N_r$  receive antennas and decomposed into  $N_s$  spatial channels),

Processing the  $M$  independent modulated signals using a channel mixing matrix to extract the data (figure 7, paragraphs 0459-0492, RX spatial processor (740)).

Walton teaches a MIMO WLAN system comprising access points and user terminals to provide high instantaneous data rates with greater coverage capabilities than conventional WLAN systems, figure 1, but is silent as to the data stream represents captured and stored video from  $N$  separate radio module transmitters.

Bjorklund teaches a multi-tier WLAN system for digital radio communication comprising a wired LAN coupled to a host (112) for data control and storage and at least one first tier access point with a relatively long-range wireless radio, figures 1 and 6. Bjorklund further teaches the first tier access radio is wirelessly or wired to a second tier access point with relatively short-range wireless radios to support various applications including the control of hotel door locks, individual room temperature control and remote video monitoring, Abstract, figure 1, column 3, line 57 to column 5, line 50. In an application, Bjorklund directly describes a video security system comprising a wired LAN, a host, several video monitors, a first tier base station or access point (640) in wireless communication with video camera (610) and a second tier access point (670) to connect another video camera (620) to the first tier base station, figure 6, column 8, lines 20-48. Bjorklund teaches the wired LAN (690) is connected to any (first tier) access point readily available on the market, column 3, line 66 to column 4, line 12, such as an IEEE 802.11 access point (640) as depicted utilizing wireless link (642) as opposed to a Bluetooth or RadPad protocol wireless link (646), figures 6 and 15, column 18, lines 53-66.

Since Bjorklund teaches the video camera (610) and communication module (660) are particularly useful in situations where high data throughput is desired and/or the video camera is located relatively far from the base station, figure 6, column 8, lines 28-36, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the WLAN application of a video security system of Bjorklund in the

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MIMO WLAN system of Walton for high data throughput and storage of high video resolution from a relative far video camera.

As to claim 30 with respect to claim 29, Bjorklund of Walton modified teaches the first data capture device is used as part of a security system (figure 6, column 8, lines 20-62, video security cameras (610, 620) as part of a security system).

As to claim 32 with respect to claim 29, Bjorklund of Walton modified teaches the first data monitoring and capturing circuit is a digital camera (column 8, lines 20-62).

As to claims 33, 47 and 52 with respect to claims 29, 46 and 51, Walton teaches the multi-antenna signal processing circuit receives and processes video data from N radio module transmitters simultaneously (paragraph 0042).

As to claims 34, 48 and 53 with respect to claims 29, 46 and 51, Walton teaches the first data capture device transmits the video data using N separate antennas simultaneously as N separate bit streams (paragraph 0008, 0052 and 0053, the access point and terminal unit comprises multiple transmit/receive antennas for data transmission and reception; a MIMO channel may be decomposed into  $N_s$  spatial channels where  $N_s$  data streams may be transmitted on the  $N_s$  spatial channels).

As to claim 35 with respect to claim 29, Walton teaches the multi-antenna signal processing circuit processes at least 4 separate input signal representing a data stream multiplexed over four separate bit streams (figure 7, paragraphs 0052-0056, each access point is equipped with four transmit and receive antennas where each MIMO channel is formed by the  $N_t$  transmit and  $N_r$  receive antennas and may be decomposed into  $N_s$  spatial channels; paragraphs 0459-00492, uplink, or signals received by the access point, spatial processing).

As to claim 36 with respect to claim 29, Walton teaches implementation in a single chip IC (paragraph 0687, one or more application specific integrated circuits (ASICs)).

As to claims 37, 49 and 54 with respect to claims 29, 46 and 54, Walton teaches a localized encryption is achieved by independently controlling an energy modulation of separate transmission antennas used simultaneously or nearly simultaneously by each of said M separate transmission signals (paragraphs 0329-0355, beam steering mode).

As to claims 50 and 55 with respect to claims 46 and 51, Bjorklund of Walton modified teaches the data is video data (figure 6, column 8, lines 20-62, video security cameras).

Claims 12 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al. (US 2004/0082356) and Bjorklund et al. (US 7,126,926) in view of Smith et al. (US 2003/0162519).

As to claim 12 with respect to claim 1 and claim 31 with respect to claim 29, Walton teaches a MIMO WLAN system comprising access points and user terminals for connection to the Internet, a public switched telephone network or a cellular communication network, figures 1 and 7, paragraphs 0039-0043, but is silent as to one of the user terminals is a personal digital assistant.

Smith teaches 4 antennas for MIMO communications in a personal digital assistant and physically arranged to provide directional antenna patterns, paragraphs 0120-0127.

It would have been obvious to one of ordinary skill in the art at the time of the invention to realize a user terminal in the MIMO WLAN system of Walton modified as the MIMO personal digital assistant equipped with four directional antennas to improve carrier to interference levels with a reduction in spatial fading.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the



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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21-26 and 38-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Walton (2004/0082356).

As to claims 21 and 38, Walton teaches an apparatus comprising:

A first data receiving circuit capable receiving data (figures 1 and 7, paragraphs 0040-0042 and 0218, AP (110x) comprising demodulators (722) and RX spatial processor (740)),

A multi-antenna signal processing circuit capable of:

Monitoring channel conditions (figure 7, paragraphs 0210 and 0218-0219, 0013, MIMO AP (110x) comprising scheduler (734) uses feedback information to perform a number of functions including the transmission rate based on the channel conditions),

Operating in a first mode (paragraphs 0057-0059, the MIMO WLAN system designed to support a number of transmission modes),

Receiving M independent signals representing the data (paragraph 0053, a MIMO channel is formed by the  $N_t$  transmit antennas and  $N_r$  receive antennas and decomposed into  $N_s$  spatial channels),

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Processing the M independent signals using a channel mixing matrix to extract the data (figure 7, paragraphs 0459-0492, RX spatial processor (740)).

As to claims 22 and 39 with respect to claims 21 and 38, Walton teaches the multi-antenna signal processing circuit is enabled and selectively operates in *said second mode* when channel conditions indicated that a data rate in said channel has fallen below a predetermined threshold (paragraphs 0658-0667, closed loop rate control may be used for data transmission on one or more spatial channels, the rate is changed with channel conditions).

As to claims 23 and 40 with respect to claims 21 and 38, Walton teaches said multi-antenna signal processing circuit is enabled and selectively operates in response to a determination that a data rate in said channel is to be enhanced above a nominal operating rate (paragraphs 0674-0676, uplink rate control).

As to claims 24 and 41 with respect to claims 21 and 38, Walton teaches the multi-antenna signal processing circuit is enabled and selectively operates in response to a determination that there is noise and or interference in said channel (paragraphs 0013 and 0052-0062), different transmission modes such as spatial multiplexing may also be used depending on the number of antennas at the user terminal, the number of antennas at the access node and the channel conditions)

As to claims 25 and 42 with respect to claims 21 and 38, Walton teaches the multi-antenna signal processing circuit is compatible with an 801.11x communications protocol (paragraph 0050).

As to claims 26 and 43 with respect to claims 21 and 38, Walton teaches the multi-antenna signal processing circuit is configured as a multiple-in, multiple out (MIMO) processor (figures 1 and 7, paragraphs 0052-0056, AP (110x)).

### ***Conclusion***

The prior art made of record and not relied upon but considered pertinent to applicant's disclosure includes Norwood et al. (US 2003/0104830), Ketchum et al. (2004/0087324) and Sugar et al. (US 2004/0121753).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Thursday, 7:30 AM-6:00 PM, EST.

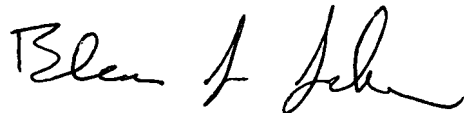
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Brian J. Johnson". The signature is written in a cursive, flowing style with a large initial "B" and a long, sweeping underline.